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(54) **SYSTEM AND METHOD OF COMMUNICATING EMERGENCY ALERTS**

(56) **References Cited**

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U.S. PATENT DOCUMENTS

5,121,430	A	6/1992	Ganzer et al.	
5,917,887	A *	6/1999	Fesler et al.	379/48
6,204,761	B1	3/2001	Vanderable	
7,050,784	B2 *	5/2006	Clark	455/404.1
2005/0229207	A1	10/2005	Kendall et al.	
2005/0273809	A1	12/2005	Kendall et al.	
2006/0020992	A1 *	1/2006	Pugel et al.	725/108

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\* cited by examiner

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(57) **ABSTRACT**

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(51) **Int. Cl.**  
**G08B 9/00** (2006.01)

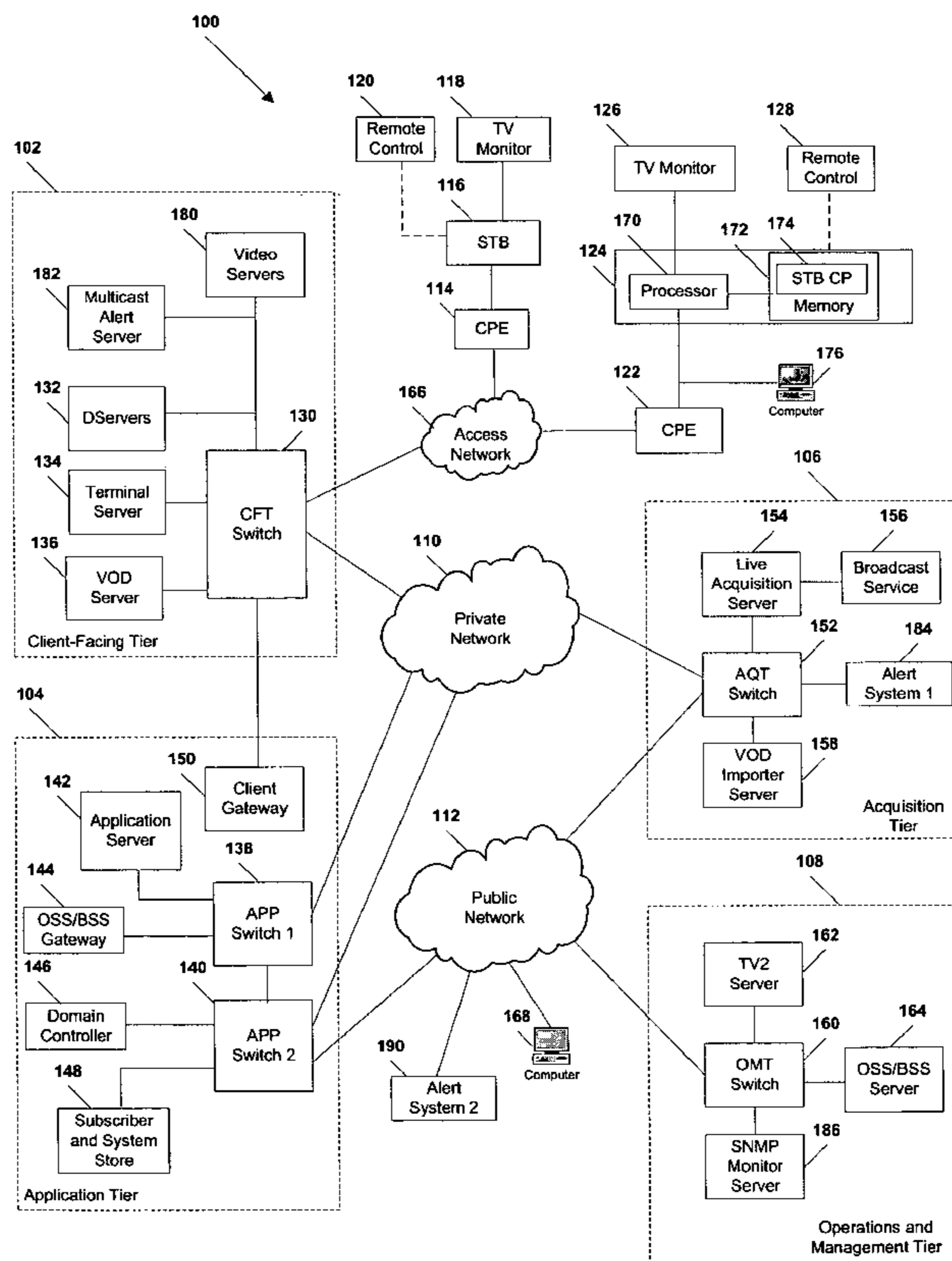
(52) **U.S. Cl.** ..... **340/286.02**; 340/531; 340/534;  
340/539.11; 340/539.13; 340/539.19; 340/7.48;  
455/184.1; 455/186.1; 455/404.1; 455/192.3

(58) **Field of Classification Search** ..... 340/286.02,  
340/531, 534, 539.11, 539.13, 539.17, 7.48;  
455/184.1, 186.1, 404.1, 192.3

See application file for complete search history.

The present disclosure is directed to a system and method of communicating emergency alerts. In a particular embodiment, the method includes receiving a multicast emergency alert message at a set-top box device via a multicast-enabled network, where the multicast emergency alert message includes data related to a location code and data related to a set-top box action. The method also includes executing the set-top box action when the location code matches location information stored at the set-top box device.

**16 Claims, 5 Drawing Sheets**



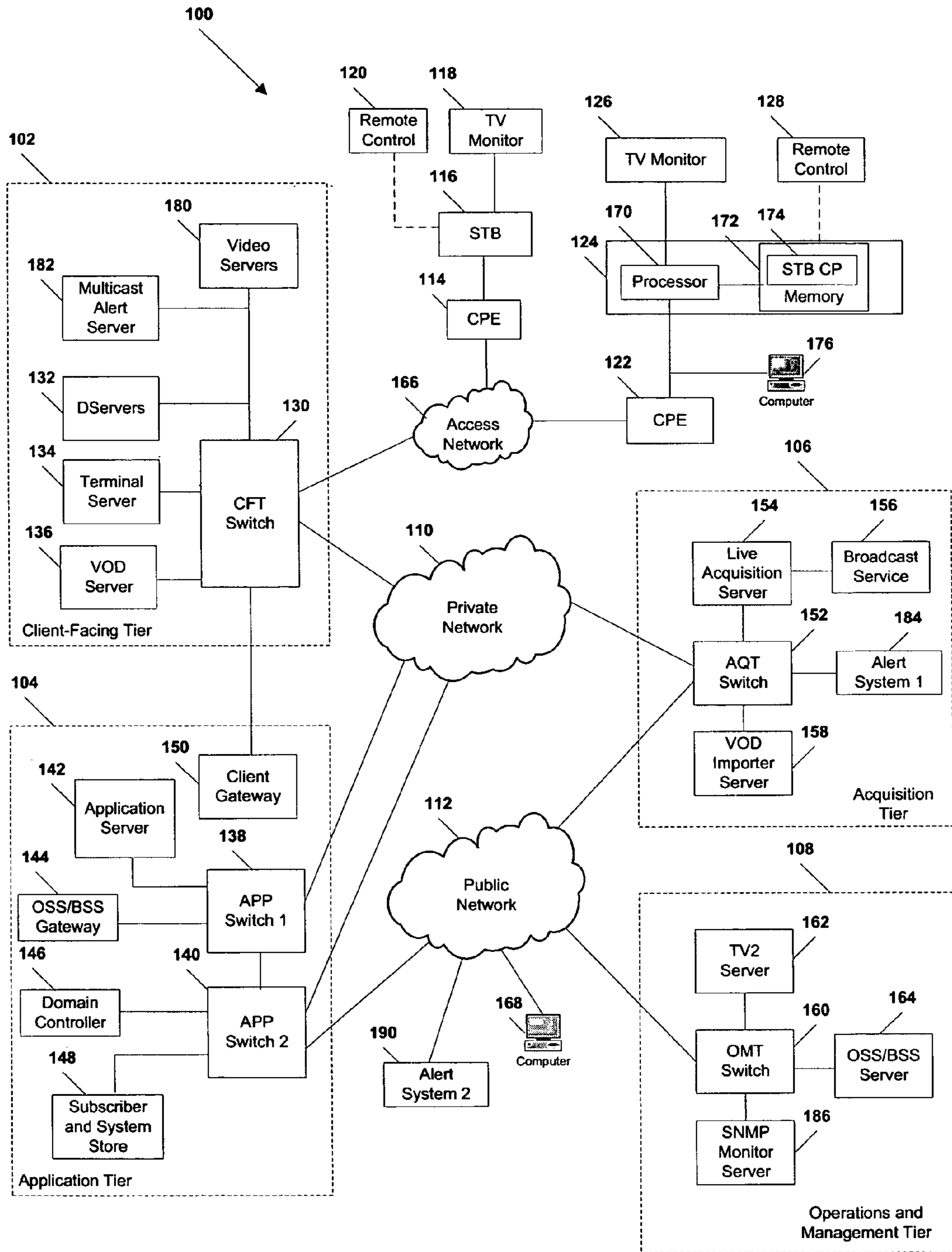


FIG. 1

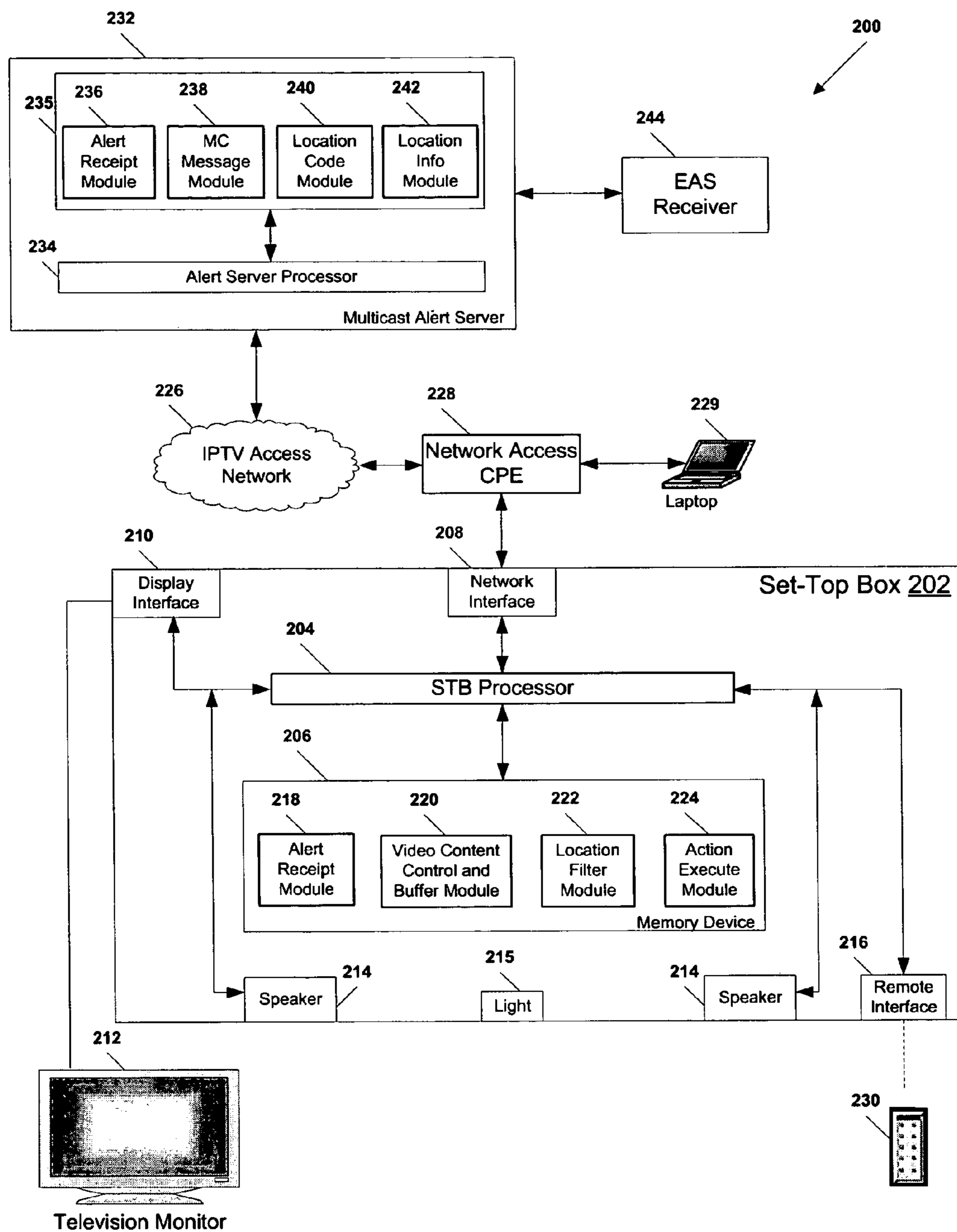


FIG. 2

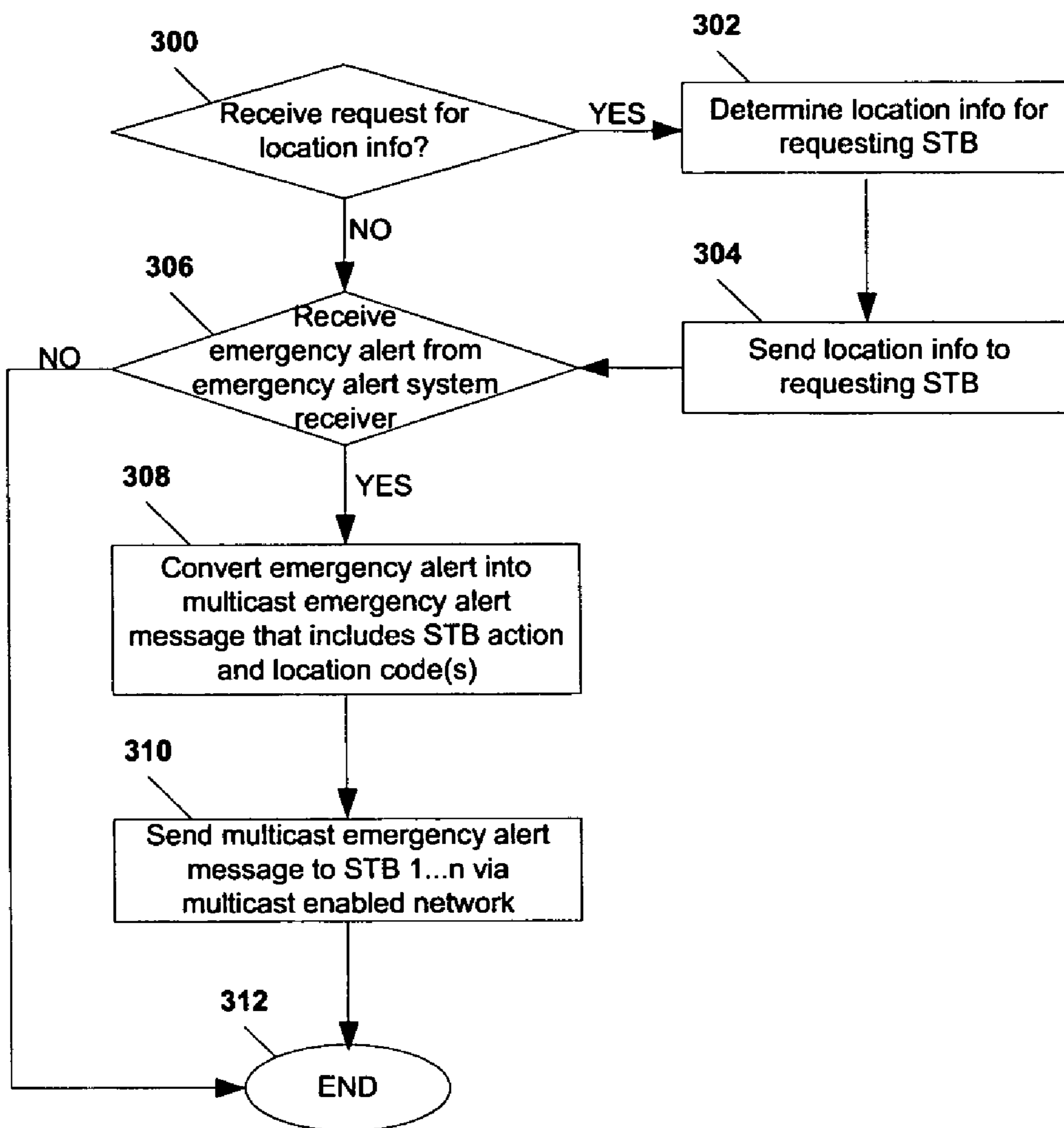


FIG. 3

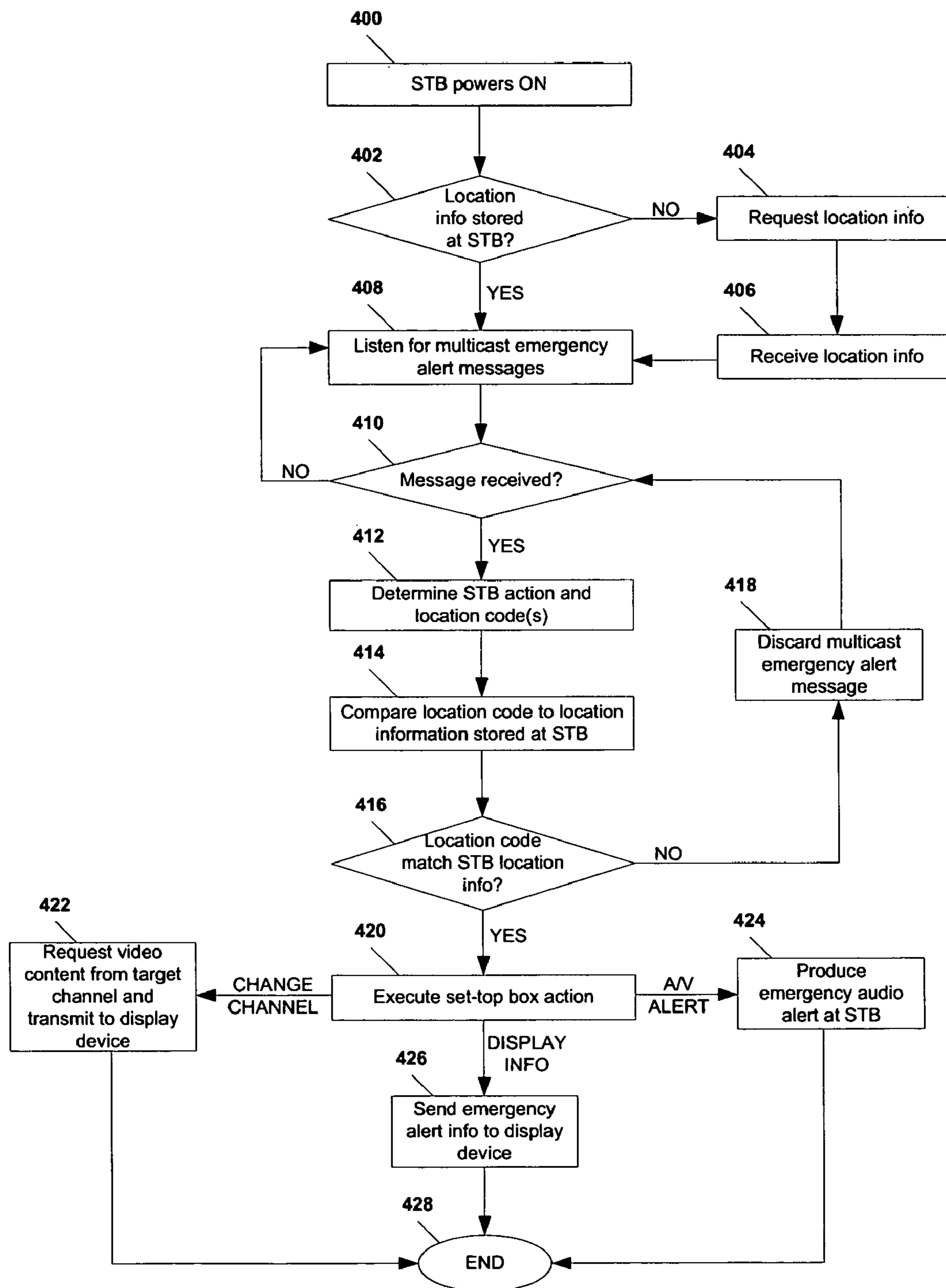


FIG. 4

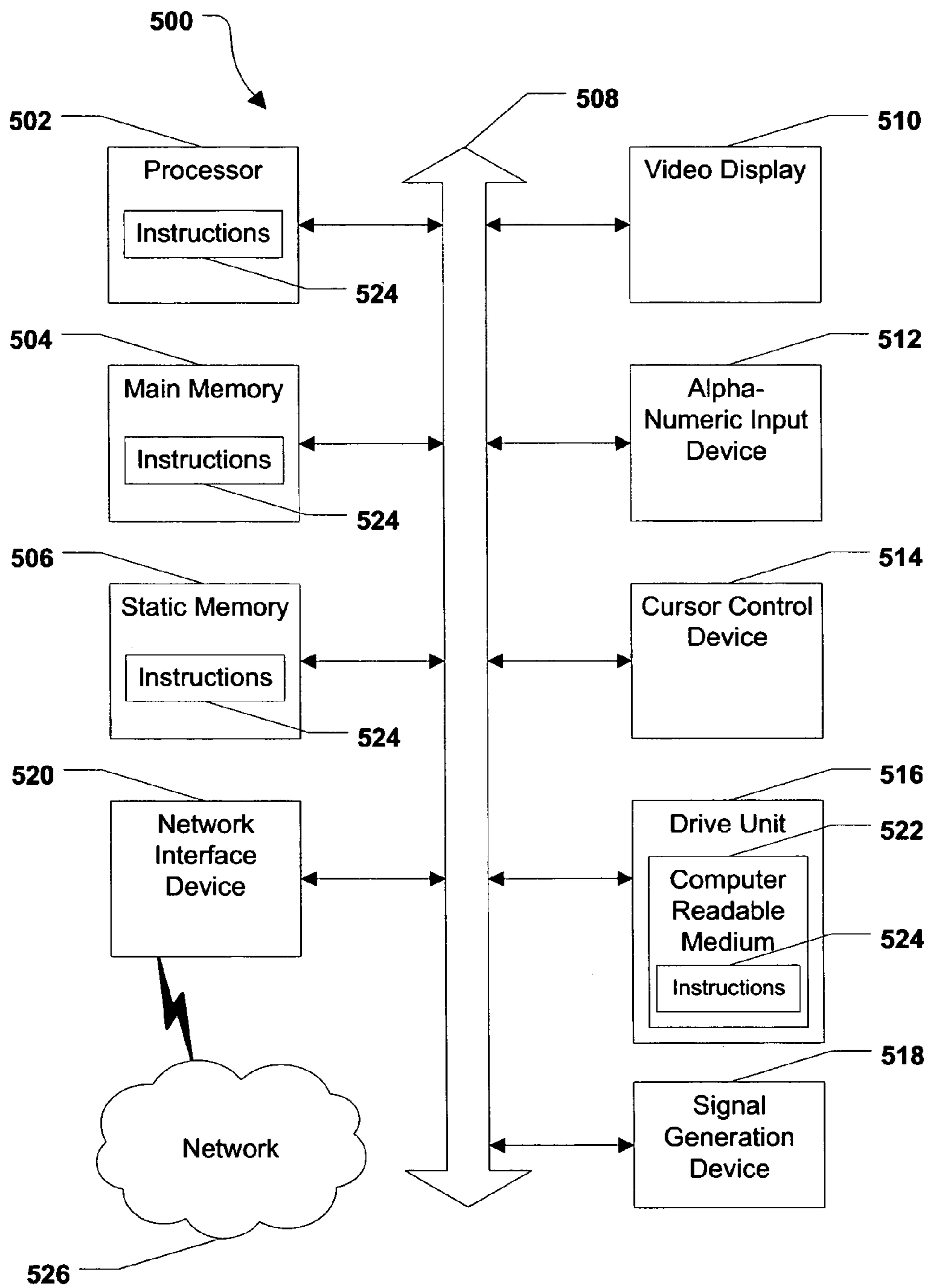


FIG. 5

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## SYSTEM AND METHOD OF COMMUNICATING EMERGENCY ALERTS

### FIELD OF THE DISCLOSURE

The present disclosure relates generally to communicating emergency alerts.

### BACKGROUND

Television viewing is part of daily life for many people. The wealth of content available from television service providers allows many people to find entertaining and informative programming despite their varying interests. As a result, television also provides a source of communication for government officials to provide emergency alerts and information. Most emergency alerts pertain to a specific geographic location within a television viewing area. Because television viewing areas can cover multiple locations, such as multiple counties, many viewers will receive emergency alerts that do not apply to them. Some systems attempt to determine which viewers should receive an emergency alert prior to transmission, and the alert is unicast to those viewers. However, such unicast connections can require extensive resources and can prevent scalability of a television service network. Hence, there is a need for a system and method of communicating emergency alerts.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of a particular illustrative embodiment of a system to communicate emergency alerts;

FIG. 2 is a block diagram of a second particular illustrative embodiment of a system to communicate emergency alerts;

FIG. 3 is a flow diagram of a particular illustrative embodiment of a method of communicating emergency alerts;

FIG. 4 is a flow diagram of a second particular illustrative embodiment of a method of communicating emergency alerts; and

FIG. 5 is a diagram of an illustrative embodiment of a general computer system.

### DETAILED DESCRIPTION OF THE DRAWINGS

The present disclosure is directed to a system that includes a multicast alert server having a processor and a memory device accessible to the processor. The memory device includes instructions to send a multicast emergency alert message to a first set-top box device at a first location and to a second set-top box device at a second location via a multicast-enabled network. The multicast emergency alert message includes data related to a set-top box action and data related to a location code. In a particular embodiment, the first set-top box device can execute the set-top box action when the location code corresponds to the first location, and the second set-top box device can execute the set-top box action when the location code corresponds to the second location.

The present disclosure is also directed to a set-top box device that includes a processor and a memory device accessible to the processor. The memory device includes instructions to communicate with a multicast alert server to receive a multicast emergency alert message via a multicast-enabled network of an Internet Protocol Television (IPTV) system, the multicast emergency alert message including data related to a location code and data related to a set-top box action. Further, the memory device stores location information and includes

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instructions to execute the set-top box action when the location code matches the location information.

In another embodiment, the disclosure is directed to a method of communicating emergency alerts that includes receiving a multicast emergency alert message at a set-top box device via a multicast-enabled network, where the multicast emergency alert message includes data related to a location code and data related to a set-top box action. The method also includes executing the set-top box action when the location code matches location information stored at the set-top box device.

In another embodiment, the disclosure is directed to a method of communicating emergency alerts that includes sending a multicast emergency alert message to a plurality of set-top box devices via a multicast-enabled network of an Internet Protocol Television (IPTV) system, where the multicast emergency alert message includes data related to a set-top box action and data related to a location code. At least one of the plurality of set-top box devices stores location information and executes the set-top box action when the location code matches the location information.

In another embodiment, the disclosure is directed to a computer program embedded in a computer-readable medium. The computer program includes instructions to communicate with a multicast alert server to receive a multicast emergency alert message via a multicast-enabled network of an Internet Protocol Television (IPTV) system, the multicast emergency alert message including data related to a location code and data related to a set-top box action. The computer program also includes instructions to execute the set-top box action when the location code matches location information stored at a set-top box device.

Referring to FIG. 1, an illustrative embodiment of an Internet Protocol Television (IPTV) system that may be used to communicate emergency alerts is illustrated and is generally designated **100**. As shown, the system **100** can include a client facing tier **102**, an application tier **104**, an acquisition tier **106**, and an operations and management tier **108**. Each tier **102**, **104**, **106**, **108** is coupled to a private network **110**; to a public network **112**, such as the Internet; or to both the private network **110** and the public network **112**. For example, the client-facing tier **102** can be coupled to the private network **110**. Further, the application tier **104** can be coupled to the private network **110** and to the public network **112**. The acquisition tier **106** can also be coupled to the private network **110** and to the public network **112**. Additionally, the operations and management tier **108** can be coupled to the public network **112**.

As illustrated in FIG. 1, the various tiers **102**, **104**, **106**, **108** communicate with each other via the private network **110** and the public network **112**. For instance, the client-facing tier **102** can communicate with the application tier **104** and the acquisition tier **106** via the private network **110**. The application tier **104** can communicate with the acquisition tier **106** via the private network **110**. Further, the application tier **104** can communicate with the acquisition tier **106** and the operations and management tier **108** via the public network **112**. Moreover, the acquisition tier **106** can communicate with the operations and management tier **108** via the public network **112**. In a particular embodiment, elements of the application tier **104**, including, but not limited to, a client gateway **150**, can communicate directly with the client-facing tier **102**.

The client-facing tier **102** can communicate with user equipment via an access network **166**, such as an Internet Protocol Television (IPTV) access network. In an illustrative embodiment, customer premises equipment (CPE) **114**, **122** can be coupled to a local switch, router, or other device of the

access network **166**. The client-facing tier **102** can communicate with a first representative set-top box device **116** at a first customer premise via the first CPE **114** and with a second representative set-top box device **124** at a second customer premise via the second CPE **122**. In a particular embodiment, the CPE **114**, **122** can communicate with computing devices at customer premises, such as the computing device **178** coupled to the second CPE **122**. The CPE **114**, **122** can include routers, local area network devices, modems, such as digital subscriber line (DSL) modems, any other suitable devices for facilitating communication between a set-top box device and the access network **166**, or any combination thereof.

In a particular embodiment, the client-facing tier **102** can be coupled to the CPE **114**, **122** via fiber optic cables. Alternatively, the CPE **114**, **122** can be digital subscriber line (DSL) modems that are coupled to one or more network nodes via twisted pairs, and the client-facing tier **102** can be coupled to the network nodes via fiber-optic cables. Each set-top box device **116**, **124** can process data received via the access network **166**, via an IPTV software platform, such as Microsoft® TV IPTV Edition.

The first set-top box device **116** can be coupled to a first external display device, such as a first television monitor **118**, and the second set-top box device **124** can be coupled to a second external display device, such as a second television monitor **126**. Moreover, the first set-top box device **116** can communicate with a first remote control **120**, and the second set-top box device **124** can communicate with a second remote control **128**. The set-top box devices **116**, **124** can include IPTV set-top box devices; video gaming devices or consoles that are adapted to receive IPTV content; personal computers or other computing devices that are adapted to emulate set-top box device functionalities; any other device adapted to receive IPTV content and transmit data to an IPTV system via an access network; or any combination thereof.

In an exemplary, non-limiting embodiment, each set-top box device **116**, **124** can receive data, video, or any combination thereof, from the client-facing tier **102** via the access network **166** and render or display the data, video, or any combination thereof, at the display device **118**, **126** to which it is coupled. In an illustrative embodiment, the set-top box devices **116**, **124** can include tuners that receive and decode television programming signals or packet streams for transmission to the display devices **118**, **126**. Further, the set-top box devices **116**, **124** can include a STB processor **170** and a STB memory device **172** that is accessible to the STB processor **170**. In one embodiment, a computer program, such as the STB computer program **174**, can be embedded within the STB memory device **172**.

In an illustrative embodiment, the client-facing tier **102** can include a client-facing tier (CFT) switch **130** that manages communication between the client-facing tier **102** and the access network **166** and between the client-facing tier **102** and the private network **110**. As illustrated, the CFT switch **130** is coupled to one or more data servers, such as D-servers **132**, that store, format, encode, replicate, or otherwise manipulate or prepare video content for communication from the client-facing tier **102** to the set-top box devices **116**, **124**. The CFT switch **130** can also be coupled to a terminal server **134** that provides terminal devices with a connection point to the private network **110**. In a particular embodiment, the CFT switch **130** can be coupled to a video-on-demand (VOD) server **136** that stores or provides VOD content imported by the IPTV system **100**.

Further, the CFT switch **130** is coupled to one or more video servers **180** that receive video content and transmit the

content to the set-top boxes **116**, **124** via the access network **166**. In a particular embodiment, the CFT switch **130** can be coupled to one or more multicast alert servers **182** that receive emergency alerts from an emergency alert system (EAS) receiver, such as a first emergency alert system **184** and a second emergency alert system **190**, and send multicast emergency alert messages that are based on the emergency alerts to the set-top box devices **116**, **124**.

In an illustrative embodiment, the client-facing tier **102** can communicate with a large number of set-top boxes, such as the representative set-top boxes **116**, **124** over a wide geographic area, such as a metropolitan area, a viewing area, a statewide area, a regional area, a nationwide area or any other suitable geographic area, market area, or subscriber or customer group that can be supported by networking the client-facing tier **102** to numerous set-top box devices. In a particular embodiment, the CFT switch **130**, or any portion thereof, can include a multicast router or switch that communicates with multiple set-top box devices via a multicast-enabled network.

As illustrated in FIG. 1, the application tier **104** can communicate with both the private network **110** and the public network **112**. The application tier **104** can include a first application tier (APP) switch **138** and a second APP switch **140**. In a particular embodiment, the first APP switch **138** can be coupled to the second APP switch **140**. The first APP switch **138** can be coupled to an application server **142** and to an OSS/BSS gateway **144**. In a particular embodiment, the application server **142** can provide applications to the set-top box devices **116**, **124** via the access network **166**, which enable the set-top box devices **116**, **124** to provide functions, such as display, messaging, processing of IPTV data and VOD material, etc. In an illustrative embodiment, the application server **142** can provide location information to the set-top box devices **116**, **124**. In a particular embodiment, the OSS/BSS gateway **144** includes operation systems and support (OSS) data, as well as billing systems and support (BSS) data. In one embodiment, the OSS/BSS gateway **144** can provide or restrict access to an OSS/BSS server **164** that stores operations and billing systems data.

The second APP switch **140** can be coupled to a domain controller **146** that provides Internet access, for example, to users at their computers **168** via the public network **112**. For example, the domain controller **146** can provide remote Internet access to IPTV account information, e-mail, personalized Internet services, or other online services via the public network **112**. In addition, the second APP switch **140** can be coupled to a subscriber and system store **148** that includes account information, such as account information that is associated with users who access the IPTV system **100** via the private network **110** or the public network **112**. In an illustrative embodiment, the subscriber and system store **148** can store subscriber or customer data and create subscriber or customer profiles that are associated with IP addresses of corresponding set-top box devices **116**, **124**.

In a particular embodiment, the application tier **104** can include a client gateway **150** that communicates data directly to the client-facing tier **102**. In this embodiment, the client gateway **150** can be coupled directly to the CFT switch **130**. The client gateway **150** can provide user access to the private network **110** and the tiers coupled thereto. In an illustrative embodiment, the set-top box devices **116**, **124** can access the IPTV system **100** via the access network **166**, using information received from the client gateway **150**. User devices can access the client gateway **150** via the access network **166**, and the client gateway **150** can allow such devices to access the private network **110** once the devices are authenticated or



verified. Similarly, the client gateway **150** can prevent unauthorized devices, such as hacker computers or stolen set-top box devices from accessing the private network **110**, by denying access to these devices beyond the access network **166**.

For example, when the first representative set-top box device **116** accesses the client-facing tier **102** via the access network **166**, the client gateway **150** can verify subscriber information by communicating with the subscriber and system store **148** via the private network **110**. Further, the client gateway **150** can verify billing information and status by communicating with the OSS/BSS gateway **144** via the private network **110**. In one embodiment, the OSS/BSS gateway **144** can transmit a query via the public network **112** to the OSS/BSS server **164**. After the client gateway **150** confirms subscriber and/or billing information, the client gateway **150** can allow the set-top box device **116** to access IPTV content and VOD content at the client-facing tier **102**. If the client gateway **150** cannot verify subscriber information for the set-top box device **116**, e.g., because it is connected to an unauthorized twisted pair, the client gateway **150** can block transmissions to and from the set-top box device **116** beyond the access network **166**.

As indicated in FIG. 1, the acquisition tier **106** includes an acquisition tier (AQT) switch **152** that communicates with the private network **110**. The AQT switch **152** can also communicate with the operations and management tier **108** via the public network **112**. In a particular embodiment, the AQT switch **152** can be coupled to a live acquisition server **154** that receives or acquires television content, movie content, advertisement content, other video content, or any combination thereof, from a broadcast service **156**, such as a satellite acquisition system or satellite head-end office. In a particular embodiment, the live acquisition server **154** can transmit content to the AQT switch **152**, and the AQT switch **152** can transmit the content to the CFT switch **130** via the private network **110**.

In an illustrative embodiment, content can be transmitted to the D-servers **132**, where it can be encoded, formatted, stored, replicated, or otherwise manipulated and prepared for communication from the video server(s) **180** to the set-top box devices **116, 124**. The CFT switch **130** can receive content from the video server(s) **180** and communicate the content to the CPE **114, 122** via the access network **166**. The set-top box devices **116, 124** can receive the content via the CPE **114, 122**, and can transmit the content to the television monitors **118, 126**. In an illustrative embodiment, video or audio portions of the content can be streamed to the set-top box devices **116, 124**.

Further, the AQT switch **152** can be coupled to a video-on-demand importer server **158** that receives and stores television or movie content received at the acquisition tier **106** and communicates the stored content to the VOD server **136** at the client-facing tier **102** via the private network **110**. Additionally, at the acquisition tier **106**, the video-on-demand (VOD) importer server **158** can receive content from one or more VOD sources outside the IPTV system **100**, such as movie studios and programmers of non-live content. The VOD importer server **158** can transmit the VOD content to the AQT switch **152**, and the AQT switch **152**, in turn, can communicate the material to the CFT switch **130** via the private network **110**. The VOD content can be stored at one or more servers, such as the VOD server **136**.

When users issue requests for VOD content via the set-top box devices **116, 124**, the requests can be transmitted over the access network **166** to the VOD server **136**, via the CFT switch **130**. Upon receiving such requests, the VOD server **136** can retrieve the requested VOD content and transmit the

content to the set-top box devices **116, 124** across the access network **166**, via the CFT switch **130**. The set-top box devices **116, 124** can transmit the VOD content to the television monitors **118, 126**. In an illustrative embodiment, video or audio portions of VOD content can be streamed to the set-top box devices **116, 124**.

In an illustrative, non-limiting embodiment, the AQT switch **152** can be coupled to a first emergency alert system **184**, such as an EAS off-air receiver that receives emergency alerts from a national weather service, an emergency broadcast system, or another emergency alert service. In an alternative embodiment, the first emergency alert system **184** can be coupled to the CFT switch **130**, to the multicast alert server **182**, or to the terminal server **134**. In an illustrative, non-limiting embodiment, a second emergency alert system **190** can be coupled to the public network **112**.

FIG. 1 further illustrates that the operations and management tier **108** can include an operations and management tier (OMT) switch **160** that conducts communication between the operations and management tier **108** and the public network **112**. In the embodiment illustrated by FIG. 1, the OMT switch **160** is coupled to a TV2 server **162**. Additionally, the OMT switch **160** can be coupled to an OSS/BSS server **164** and to a simple network management protocol (SNMP) monitor **186** that monitors network devices within or coupled to the IPTV system **100**. In a particular embodiment, the OMT switch **160** can communicate with the AQT switch **152** via the public network **112**.

In an illustrative embodiment, the live acquisition server **154** can transmit content to the AQT switch **152**, and the AQT switch **152**, in turn, can transmit the content to the OMT switch **160** via the public network **112**. In this embodiment, the OMT switch **160** can transmit the content to the TV2 server **162** for display to users accessing the user interface at the TV2 server **162**. For example, a user can access the TV2 server **162** using a personal computer **168** coupled to the public network **112**.

In a particular illustrative embodiment, an emergency alert is received at the first emergency alert system **184**. The emergency alert can be a weather alert, a civil defense alert, an Amber alert, a Presidential alert, or any other emergency alert. In a particular embodiment, the emergency alert can indicate one or more geographic areas to which the emergency alert applies, such as a street, city, zip code, area code, county, state, region, time zone, nation, or other geographic area. The emergency alert can also include emergency alert information, such as the type of emergency, a degree of urgency associated with the emergency, safety precaution instructions, other emergency alert information, or any combination thereof. In an illustrative embodiment, the first emergency alert system **184** can communicate the emergency alert to the multicast alert server(s) **182** over the private network via the AQT switch.

In another particular embodiment, an emergency alert can be received at the second emergency alert system **190**. The emergency alert can be received at the second emergency alert system **190** from an emergency alert service, for example, via radio transmission. Alternatively, the emergency alert can be received at the second emergency alert system **190** via the public network **112**, for instance, from a web browser or web server application operating at a user computing device **168**, such as customer computing device, a local law enforcement computing device (e.g., for Amber alerts), a local government agency computing device, or other computing device that can issue emergency alerts related to a specific geographic area. In an illustrative embodiment, the second emergency alert system **190** can send a unicast mes-

sage including the emergency alert to the multicast alert server **182** over the public network **112** via the AQT switch **152** or the second APP switch **140**.

The multicast alert server(s) **182** can generate a multicast emergency alert message based on an emergency alert that it receives from the first emergency alert system **184**, the second emergency alert system **190**, or any combination thereof (e.g., in the case of multiple redundant alerts). In a particular embodiment, the multicast emergency alert message includes data related to a location code and data related to an action to be taken by a set-top box device. The location code(s) can indicate one or more geographic areas to which the emergency alert received from the first emergency alert system **184** applies. For instance, the location code can indicate streets, zip codes, area codes, cities, counties, states, regions, time zones, nations, or other geographic areas. In another embodiment, the location code(s) can indicate one or more IP addresses of set-top box devices in the intended geographic area(s).

The multicast emergency alert message can also include data related to any emergency alert information included with the emergency alert received from the first emergency alert system **184**. In an illustrative embodiment, the multicast alert server(s) **182** can format the multicast emergency alert message to be sent via a multicast-enabled network to a plurality of set-top box devices in multiple geographic areas.

In an illustrative embodiment, the access network **166** can be a multicast-enabled network that communicates with a plurality of set-top boxes in multiple geographic areas. For example, the first representative set-top box device **116** can be at a customer premise in a first geographic area, and the second representative set-top box device **124** can be at a customer premise in a second geographic area. The multicast alert server(s) **182** can multicast the multicast emergency alert message to all set-top box devices communicating with the access network **166**.

In a particular embodiment, each set-top box device that communicates with the multicast-enabled network can include location information. The location information can indicate a geographic area of the customer premise at which the set-top box device is located, one or more geographic areas for which a user of the set-top box device is to be alerted regarding an emergency, or any combination thereof. For example, the first representative set-top box device **116** can include location information related to a geographic area of the first customer premise, and the second representative set-top box device **124** can include location information related to a geographic area of the second customer premise. In another example, each set-top box device can include location information related to nearby geographic areas, geographic areas of one or more relatives of users of the set-top box device, or additional geographic areas other than that of the customer premise at which each set-top box device is located.

Location information can be included at the set-top box devices **116**, **124** in a variety of ways. For example, an installer that installs a set-top box device at a customer premise can enter location information at the time of installation. Alternatively, the set-top box device can receive the location information from the OSS/BSS server **164**, the subscriber and system store **148**, or any combination thereof, when a user account associated with a set-top box device is created.

In a particular embodiment, the set-top box devices **116**, **124** can determine upon powering up whether they have current location information, if any. A set-top box device can issue a request via the multicast-enabled network to receive

location information. In an illustrative embodiment, a server of the IPTV system **100**, such as the multicast alert server(s) **182**, the application server **142**, OSS/BSS server **164**, the subscriber and system store **148**, or any combination thereof, can determine location information related to the set-top box device, based on an IP address of the set-top box device, a geographic location of the set-top box device, location information selected by a customer associated with the set-top box device, or any combination thereof. The location information can be sent to the requesting set-top box device via the multicast-enabled network.

In an illustrative embodiment, when a set-top box device, such as the first representative set-top box device **116**, receives a multicast emergency alert message from the multicast alert server(s) **182** via the multicast-enabled network, the set-top box device **116** determines a location code indicated by data included with the multicast emergency alert message and compares the location code with the location information stored at the set-top box device **116**. If the location code matches the location information, the set-top box device can execute a set-top box action indicated by data included with the multicast emergency alert message. A set-top box action can include requesting video content of a target channel from a video server **180** of the IPTV system **100**; transmitting such video content to a television monitor **118**; producing an audio alert via a speaker or other audio element of the set-top box device **116** or television monitor **118**; producing a visual alert via a light, light-emitting diode (LED), or other visual element of the set-top box device **116**; sending emergency alert information included with the multicast emergency alert message to the television monitor **118**, such as scrolling text overlaying video content; or any combination thereof.

In a particular embodiment, when another set-top box device in another geographic location, such as the second representative set-top box device **124**, receives the same multicast emergency alert message from the multicast alert server(s) **182** via the multicast-enabled network, the set-top box device **124** can determine the location code indicated by data included with the multicast emergency alert message and compare the location code with the location information stored at the set-top box device **124**. If the set-top box device **124** determines that the location code does not match the location information stored at the set-top box device **124**, the set-top box device can delete or otherwise discard the multicast emergency alert message received from the multicast alert server(s) **182**.

In a particular embodiment, a computing device can be coupled to customer premise equipment at a customer premise where a set-top box device is located. For example, a computing device **176** can be coupled to the second customer premise equipment **122** at the second customer premise where the second representative set-top box device **124** is located. In an illustrative embodiment, the computing device **176** can download and store location information from the multicast alert server(s) **182** or application server **142** via the multicast-enabled network, the public network, or any combination thereof. The computing device **176** can receive multicast emergency alert messages sent by the multicast alert server(s) **182** via the second customer premise equipment **122**. The computing device **176** can compare a location code indicated by data of a multicast emergency alert message and can indicate that a multicast emergency alert message has been received at the second representative set-top box device **124**, for example. In another embodiment, the computing device can display emergency alert information, such as text, audio, video, or any combination thereof.

Referring to FIG. 2, a second particular embodiment of a system to communicate emergency alerts is illustrated and designated generally at **200**. The system **200** includes a set-top box device **202** that communicates with a multicast alert server **232** of an Internet Protocol Television (IPTV) system via a multicast-enabled IPTV access network **226**. Further, the multicast alert server **232** communicates with an emergency alert system (EAS) receiver **244**. In addition, a computing device **229** can communicate with the multicast alert server **232** via the IPTV access network **226** via the network access customer premises equipment **228**.

As indicated in FIG. 2, the set-top box device **202** includes a STB processor **204** and a memory device **206** accessible to the STB processor **204**. In an illustrative, non-limiting embodiment, the STB processor **204** can communicate with the IPTV access network **226**, via the network interface **208**. In a particular embodiment, network access customer premises equipment (CPE) **228** can facilitate communication between the network interface **208** and the IPTV access network **226**. The network access CPE **228** can include a router, a local area network device, a modem, such as a digital subscriber line (DSL) modem, any other suitable device for facilitating communication between the network interface **208** of the set-top box device **202** and the IPTV access network **226**, or any combination thereof. Further, the STB processor **204** can communicate video content and emergency alert information to a display device **212** via a display interface **210**. In addition, the STB processor **204** can receive commands from a remote control device **230** via a remote interface **216**.

In a particular embodiment, the memory device **206** can include an alert receipt module **218** that is executable by the STB processor **204** to receive multicast emergency alert messages from the multicast alert server **232**. In an illustrative embodiment, the alert receipt module **218** can be executable by the STB processor **204** to listen to the IPTV access network **226** for such messages. Further, the memory device **206** can include a video content control and buffer module **220** that is executable by the STB processor **204** to receive video content via the IPTV access network **226** and to buffer the video content before transmitting it to the display interface **210**, in order to prevent underflow.

In an illustrative embodiment, the memory device **206** can include a location filter module **222** that is executable by the STB processor **204** to store location information related to one or more geographic areas for which a user of the set-top box device **202** is to be alerted about emergencies. Further, the location filter module **222** is executable by the STB processor **204** to determine a location code indicated by data of a multicast emergency alert message and to compare the location code with the location information stored at the set-top box device **202**. Location information can be stored at the location filter module **222** when the set-top box device **202** is installed at a customer premise; when an account associated with the set-top box device **202** is created; upon request from the set-top box device **202**, for example, upon powering up; or any combination thereof.

In a particular embodiment, the memory device **206** can include an action execute module **224** that is executable by the STB processor **204** to determine a set-top box action indicated by data of the multicast emergency alert message and to execute the set-top box action when a location code indicated by data of the multicast emergency alert message matches location information stored at the set-top box device **202**. For example, the action execute module **224** can be executable by the STB processor **204** to request video content of a particular channel from a video server; to transmitting particular video

content to the display device **212**; to produce an audio alert via a speaker **214** or other audio element of the set-top box device **202** or the display device **212**; producing a visual alert via a light **215**, light-emitting diode (LED), or other visual element of the set-top box device **202**; sending emergency alert information included with the multicast emergency alert message to the display device **212**, such as scrolling text overlaying video content; or any combination thereof.

In a particular embodiment, the location filter module **222** can be executable by the STB processor **204** to determine whether location information is stored at the set-top box device **202**. For example, the location filter module **222** can be executable by the STB processor **204** to determine, upon the set-top box device **202** powering up or switching to an activated mode, whether location information is stored at the memory device **206**. In an illustrative embodiment, the location filter module **222** can be executable by the STB processor **204** to determine whether any location information stored at the set-top box device **202** is current. If no location information, or non-current location information, is stored at the set-top box device **202**, the location filter module **222** can be executable by the STB processor **204** to request location information from the multicast alert server **232** or another server via the IPTV access network **226** and to store location information received via the IPTV access network **226**.

In a particular embodiment, the multicast alert server **232** can include an alert server processor **234**. The multicast alert server **232** can also include a multicast server memory device **235**. The multicast server memory device **235** can include an alert receipt module **236** that is executable by the alert server processor **234** to communicate with the EAS receiver **244** via the Internet, a private network of the IPTV system, or any combination thereof, to receive emergency alerts. In an illustrative embodiment, the multicast server memory device **235** can include a multicast message module **238** that is executable by the alert server processor **234** to determine one or more intended geographic locations of an emergency alert and to determine a set-top box action based on an emergency alert. Further, the multicast message module **238** can be executable by the alert server processor **234** to generate a multicast emergency alert message based on the emergency alert received from the EAS receiver **244**. The multicast emergency alert message can include data related to a location code that corresponds to the intended location(s) and data related to the determined set-top box action. In a particular embodiment, the multicast emergency alert message can also include data related to emergency alert information received with the emergency alert, such as a type of emergency, a degree of urgency of an emergency, safety precaution instructions, an elimination or ceasing of the emergency, a path or direction of the emergency, or any combination thereof.

The multicast message module **238** is executable by the alert server processor **234** to multicast emergency alert messages to a plurality of set-top box devices, including the set-top box device **202**, via the IPTV access network **226**. The plurality of set-top box devices can include all set-top box devices communicating with the IPTV access network **226**, or any portion of such set-top box devices. In an illustrative embodiment, the multicast message module **238** can be executable by the alert server processor **234** to multicast emergency alert messages to a computing device **229** coupled to the network access customer premise equipment **228** at a customer premise where one of the plurality of set-top box devices is located.

In a particular embodiment, the multicast server memory device **235** can include a location code module **240** that associates various location codes with various geographic

locations of set-top box devices with which the multicast alert server **232** communicates. In an illustrative embodiment, location codes can include federal information protocol standards (FIPS) codes, proprietary location codes, other location codes, or any combination thereof.

In a particular embodiment, the multicast server memory device **235** can include a location information module **242** that is executable by the alert server processor **234** to receive and process a request from a set-top box device, such as the set-top box device **202**, for location information. In an illustrative embodiment, the location information module **242** can be executable by the alert server processor **234** to determine location information for a requesting set-top box device based on an IP address associated with the requesting set-top box device, a twisted pair associated with the requesting set-top box device, a customer account associated with the requesting set-top box device, or any combination thereof. The location information module **242** is executable by the alert server processor **234** to send the determined location information to the requesting set-top box device via the IPTV access network **226**.

In a particular embodiment, the location information module **242** can be executable by the alert server processor **234** to receive and process a request from a computing device, such as the computing device **229**, for location information. In an illustrative embodiment, the location information module **242** can be executable by the alert server processor **234** to determine location information for a requesting computing device based on an IP address associated with the requesting computing device, a twisted pair associated with the requesting computing device, a customer account associated with the requesting computing device, or any combination thereof. The location information module **242** is executable by the alert server processor **234** to send the determined location information to the requesting computing device via the IPTV access network **226**.

In an illustrative embodiment, the various modules **218-224** and **236-242** can include logic, hardware, computer instructions, or any combination thereof.

Referring to FIG. **3**, a particular illustrative embodiment of a method of communicating emergency alerts is illustrated. At decision step **300**, a multicast alert server of an Internet Protocol Television (IPTV) system determines whether it has received a request for location information from a set-top box device. If the multicast alert server determines that it has not received a request for location information from a set-top box device, the method proceeds to decision step **306**. Conversely, if the multicast alert server determines that it has received a request for location information from a set-top box device, the method moves to block **302**, and the multicast alert server determines location information corresponding to the requesting set-top box device. At block **304**, the multicast alert server sends the location information to the requesting set-top box device. The method then moves to decision step **306**.

The location information can indicate a geographic area of the customer premise at which the set-top box device is located, one or more geographic areas for which a user of the set-top box device is to be alerted regarding an emergency, or any combination thereof. In an illustrative embodiment, the multicast alert server can determine location information for a requesting set-top box device based on an IP address associated with the requesting set-top box device, a geographic location associated with the requesting set-top box device, a twisted pair associated with the requesting set-top box device, a customer account associated with the requesting set-top box device, or any combination thereof.

At decision step **306**, the multicast alert server determines whether it has received an emergency alert from an emergency alert system (EAS) receiver. The emergency alert can be a weather alert, a civil defense alert, an Amber alert, a Presidential alert, or any other emergency alert. In a particular embodiment, the emergency alert can indicate one or more geographic areas to which the emergency alert applies, such as a street, city, zip code, area code, county, state, region, time zone, nation, or other geographic area. In an illustrative embodiment, the emergency alert can also include emergency alert information, such as the type of emergency, a degree of urgency associated with the emergency, safety precaution instructions, other emergency alert information, or any combination thereof. In an illustrative embodiment, the emergency alert can be received via a public Internet Protocol (IP) network, such as the Internet, via a private network of the IPTV system, or any combination thereof.

If the multicast alert server determines that it has not received an emergency alert, the method terminates at **312**. On the other hand, if the multicast alert server determines that it has received an emergency alert, the method continues to block **308**. At block **308**, in a particular embodiment, the multicast alert server converts the emergency alert into a multicast emergency alert message that includes data related to a set-top box action and data related to a location code. In a particular embodiment, the multicast emergency alert message can include data related to any emergency alert information included with the emergency alert received from the EAS receiver. In an illustrative embodiment, the multicast alert server can format the multicast emergency alert message to be sent via a multicast-enabled network.

Moving to block **310**, the multicast alert server sends the multicast emergency alert message to a plurality of set-top box devices via a multicast-enabled network of the IPTV system. The set-top box devices can be in different geographic areas and can include all set-top box devices communicating with the multicast-enabled network, or one or more groups of set-top box devices communicating with the multicast-enabled network. Each set-top box device can determine a location code based on data of the multicast emergency alert message and can compare the location code to location information stored at the set-top box device. If the location code matches the location information, the set-top box device can execute the set-top box action indicated in data of the multicast emergency alert message. The method terminates at **312**.

Referring to FIG. **4**, a second particular illustrative embodiment of a method of communicating emergency alerts is illustrated. At block **400**, a set-top box powers on or comes to an activated state. Moving to decision step **402**, in a particular embodiment, the set-top box device determines whether location information is stored at the set-top box device. If the set-top box device determines that location information is stored at the set-top box device, the method proceeds to block **408**. On the other hand, if the set-top box device determines that location information is not stored at the set-top box device, or location information stored at the set-top box device is not current, the method moves to block **404**, and the set-top box device requests location information from a server, such as an application server or multicast alert server, of an Internet Protocol Television (IPTV) system via a multicast-enabled network of the IPTV system. The method continues to block **406**, and the set-top box device receives the location information.

At block **408**, in a particular embodiment, the set-top box device listens for multicast emergency alert messages on the IPTV network. Proceeding to decision step **410**, the set-top

box device can determine whether it has received a multicast emergency alert message from a multicast alert server of the IPTV system via the IPTV network. If the set-top box device determines that it has not received a multicast emergency alert message, the method returns to block 408, and the set-top box device continues to listen for multicast emergency alert messages on the IPTV network. If the set-top box device determines that it has received a multicast emergency alert message, the method advances to block 412, and the set-top box device determines a set-top box action and a location code from data of the multicast emergency alert message.

Moving to block 414, the set-top box device compares the determined location code with location information stored at the set-top box device. The method continues to decision step 416, and the set-top box device determines whether the determined location code matches the location information. In an illustrative embodiment, if the set-top box device determines that the determined location code does not match the location information, the method moves to block 418, and the set-top box device can delete or otherwise discard the multicast emergency alert message. The method then returns to block 410 and continues.

Returning to decision step 416, if the set-top box device determines that the determined location code matches the location information, the method proceeds to block 420, and the set-top box device executes the set-top box action determined from data of the multicast emergency alert message. In one embodiment, the set-top box action can be a channel change action. For example, the emergency alert can be a Presidential or other government announcement televised on a particular channel. The method can move to block 422, and the set-top box device can request video content of the particular channel from a video server of the IPTV system and can send the video content to a display device coupled to the set-top box device.

In another embodiment, the set-top box action can be an audio/visual alert action. The method can move to block 424, and the set-top box device can produce an audio alert via a speaker or other audio element of the set-top box device or television monitor; produce a visual alert via a light, light-emitting diode (LED), or other visual element of the set-top box device; or any combination thereof.

In a further embodiment, the set-top box action can be an information display action. The method proceeds to block 426, and the set-top box device can send emergency alert information included with the multicast emergency alert message to the television monitor, such as scrolling text overlaying video content. The method terminates at 428.

In a particular embodiment, the steps of the methods described herein can be executed in the order shown by the figures. In alternative embodiments, some steps can be executed simultaneously or in alternative sequences.

In conjunction with the configuration of structure described herein, the system and method disclosed provide communication of emergency alerts. In a particular illustrative embodiment, an emergency alert is received at the EAS off-air receiver. The emergency alert can be a weather alert, a civil defense alert, an Amber alert, a Presidential alert, or any other emergency alert. In a particular embodiment, the emergency alert can indicate one or more geographic areas to which the emergency alert applies, such as a street, city, zip code, area code, county, state, region, time zone, nation, or other geographic area. The emergency alert can also include emergency alert information, such as the type of emergency, a degree of urgency associated with the emergency, safety precaution instructions, other emergency alert information, or any combination thereof.

The EAS off-air receiver communicates the emergency alert to one or more multicast alert servers of an Internet Protocol Television (IPTV) system. The multicast alert server(s) generate a multicast emergency alert message based on the emergency alert. In a particular embodiment, the multicast emergency alert message includes data related to a location code and data related to an action to be taken by a set-top box device. The location code(s) can indicate one or more geographic areas to which the emergency alert received from the EAS off-air receiver applies. For instance, the location code can indicate streets, zip codes, area codes, cities, counties, states, regions, time zones, nations, or other geographic areas. In another embodiment, the location code(s) can indicate one or more IP addresses of set-top box devices in the intended geographic area(s).

The multicast emergency alert message can also include data related to any emergency alert information included with the emergency alert received from the EAS off-air receiver. In an illustrative embodiment, the multicast alert server(s) can format the multicast emergency alert message to be sent via a multicast-enabled network of the IPTV system to a plurality of set-top box devices in multiple geographic areas.

In a particular embodiment, each set-top box device that communicates with the multicast-enabled network can include location information. The location information can indicate a geographic area of the customer premise at which the set-top box device is located, one or more geographic areas for which a user of the set-top box device is to be alerted regarding an emergency, or any combination thereof. For example, a set-top box device can include location information related to a geographic area of the customer premise at which the set-top box device located. In another example, each set-top box device can include location information related to nearby geographic areas, geographic areas of one or more relatives of users of the set-top box device, or additional geographic areas other than that of the customer premise at which each set-top box device is located.

In an illustrative embodiment, when a set-top box device receives a multicast emergency alert message from the multicast alert server(s) via the multicast-enabled network, the set-top box device determines a location code indicated by data included with the multicast emergency alert message and compares the location code with the location information stored at the set-top box device. If the location code matches the location information, the set-top box device can execute a set-top box action indicated by data included with the multicast emergency alert message. A set-top box action can include requesting video content of a particular channel from a video server of the IPTV system; transmitting such video content to a television monitor coupled to the set-top box device; producing an audio alert via a speaker or other audio element of the set-top box device or television monitor; producing a visual alert via a light, light-emitting diode (LED), or other visual element of the set-top box device; sending emergency alert information included with the multicast emergency alert message to the television monitor, such as scrolling text overlaying video content; or any combination thereof.

In a particular embodiment, when another set-top box device in another geographic location receives the same multicast emergency alert message from the multicast alert server(s) via the multicast-enabled network, the set-top box device can determine the location code indicated by data included with the multicast emergency alert message and compare the location code with the location information stored at the set-top box device. If the set-top box device determines that the location code does not match the location information stored at the set-top box device, the set-top box

device can delete or otherwise discard the multicast emergency alert message received from the multicast alert server(s).

In a particular embodiment, a set-top box device can request location information. For example, a set-top box device can determine upon powering up that it does not have current location information, if any. The set-top box device can issue a request via the multicast-enabled network to receive location information. In an illustrative embodiment, a server of the IPTV system, such as the multicast alert server(s) or an application server, can determine location information related to the set-top box device and can send the location information to the requesting set-top box device via the multicast-enabled network.

In a particular embodiment, a computing device can be coupled to customer premise equipment at a customer premise where a set-top box device is located. In an illustrative embodiment, the computing device can download and store location information from the multicast alert server(s) or application server via the multicast-enabled network, a public network, such as the Internet, or any combination thereof. The computing device can receive multicast emergency alert messages sent by the multicast alert server(s) via the customer premise equipment. The computing device can compare a location code indicated by data of a multicast emergency alert message and can indicate that a multicast emergency alert message has been received at the set-top box device, for example. In another embodiment, the computing device can display emergency alert information, such as text, audio, video, or any combination thereof.

Referring to FIG. 5, an illustrative embodiment of a general computer system is shown and is designated 500. The computer system 500 can include a set of instructions that can be executed to cause the computer system 500 to perform any one or more of the methods or computer based functions disclosed herein. The computer system 500, or any portion thereof, may operate as a standalone device or may be connected, e.g., using a network, to other computer systems or peripheral devices, including a server or set-top box device, as shown in FIGS. 1-2.

In a networked deployment, the computer system may operate in the capacity of an IPTV server, such as a video server or multicast alert server, or a set-top box device. The computer system 500 can also be implemented as or incorporated into various devices, such as an emergency alert system (EAS) receiver, a personal computer (PC), a tablet PC, a set-top box (STB), a personal digital assistant (PDA), a mobile device, a palmtop computer, a laptop computer, a desktop computer, a communications device, a wireless telephone, a land-line telephone, a control system, a camera, a scanner, a facsimile machine, a printer, a pager, a personal trusted device, a web appliance, a network router, switch or bridge, or any other machine capable of executing a set of instructions (sequential or otherwise) that specify actions to be taken by that machine. In a particular embodiment, the computer system 500 can be implemented using electronic devices that provide voice, video or data communication. Further, while a single computer system 500 is illustrated, the term "system" shall also be taken to include any collection of systems or sub-systems that individually or jointly execute a set, or multiple sets, of instructions to perform one or more computer functions.

As illustrated in FIG. 5, the computer system 500 may include a processor 502, e.g., a central processing unit (CPU), a graphics-processing unit (GPU), or both. Moreover, the computer system 500 can include a main memory 504 and a static memory 506 that can communicate with each other via

a bus 508. As shown, the computer system 500 may further include a video display unit 510, such as a liquid crystal display (LCD), an organic light emitting diode (OLED), a flat panel display, a solid state display, or a cathode ray tube (CRT). Additionally, the computer system 500 may include an input device 512, such as a keyboard, and a cursor control device 514, such as a mouse. Further, the computer system 500 can include a wireless input device 515, e.g., a remote control device. The computer system 500 can also include a disk drive unit 516, a signal generation device 518, such as a speaker or remote control, and a network interface device 520.

In a particular embodiment, as depicted in FIG. 5, the disk drive unit 516 may include a computer-readable medium 522 in which one or more sets of instructions 524, e.g. software, can be embedded. Further, the instructions 524 may embody one or more of the methods or logic as described herein. In a particular embodiment, the instructions 524 may reside completely, or at least partially, within the main memory 504, the static memory 506, and/or within the processor 502 during execution by the computer system 500. The main memory 504 and the processor 502 also may include computer-readable media.

In an alternative embodiment, dedicated hardware implementations, such as application specific integrated circuits, programmable logic arrays and other hardware devices, can be constructed to implement one or more of the methods described herein. Applications that may include the apparatus and systems of various embodiments can broadly include a variety of electronic and computer systems. One or more embodiments described herein may implement functions using two or more specific interconnected hardware modules or devices with related control and data signals that can be communicated between and through the modules, or as portions of an application-specific integrated circuit. Accordingly, the present system encompasses software, firmware, and hardware implementations.

In accordance with various embodiments of the present disclosure, the methods described herein may be implemented by software programs executable by a computer system. Further, in an exemplary, non-limited embodiment, implementations can include distributed processing, component/object distributed processing, and parallel processing. Alternatively, virtual computer system processing can be constructed to implement one or more of the methods or functionality as described herein.

The present disclosure contemplates a computer-readable medium that includes instructions 524 or receives and executes instructions 524 responsive to a propagated signal, so that a device connected to a network 526 can communicate voice, video or data over the network 526. Further, the instructions 524 may be transmitted or received over the network 526 via the network interface device 520.

While the computer-readable medium is shown to be a single medium, the term "computer-readable medium" includes a single medium or multiple media, such as a centralized or distributed database, and/or associated caches and servers that store one or more sets of instructions. The term "computer-readable medium" shall also include any medium that is capable of storing, encoding or carrying a set of instructions for execution by a processor or that cause a computer system to perform any one or more of the methods or operations disclosed herein.

In a particular non-limiting, exemplary embodiment, the computer-readable medium can include a solid-state memory such as a memory card or other package that houses one or more non-volatile read-only memories. Further, the com-

puter-readable medium can be a random access memory or other volatile re-writable memory. Additionally, the computer-readable medium can include a magneto-optical or optical medium, such as a disk or tapes or other storage device to capture carrier wave signals such as a signal communicated over a transmission medium. A digital file attachment to an e-mail or other self-contained information archive or set of archives may be considered a distribution medium that is equivalent to a tangible storage medium. Accordingly, the disclosure is considered to include any one or more of a computer-readable medium or a distribution medium and other equivalents and successor media, in which data or instructions may be stored.

In accordance with various embodiments, the methods described herein may be implemented as one or more software programs running on a computer processor. Dedicated hardware implementations including, but not limited to, application specific integrated circuits, programmable logic arrays and other hardware devices can likewise be constructed to implement the methods described herein. Furthermore, alternative software implementations including, but not limited to, distributed processing or component/object distributed processing, parallel processing, or virtual machine processing can also be constructed to implement the methods described herein.

It should also be noted that software that implements the disclosed methods may optionally be stored on a tangible storage medium, such as: a magnetic medium, such as a disk or tape; a magneto-optical or optical medium, such as a disk; or a solid state medium, such as a memory card or other package that houses one or more read-only (non-volatile) memories, random access memories, or other re-writable (volatile) memories. The software may also utilize a signal containing computer instructions. A digital file attachment to e-mail or other self-contained information archive or set of archives is considered a distribution medium equivalent to a tangible storage medium. Accordingly, the disclosure is considered to include a tangible storage medium or distribution medium as listed herein, and other equivalents and successor media, in which the software implementations herein may be stored.

Although the present specification describes components and functions that may be implemented in particular embodiments with reference to particular standards and protocols, the invention is not limited to such standards and protocols. For example, standards for Internet and other packet switched network transmission (e.g., TCP/IP, UDP/IP, HTML, HTTP) represent examples of the state of the art. Such standards are periodically superseded by faster or more efficient equivalents having essentially the same functions. Accordingly, replacement standards and protocols having the same or similar functions as those disclosed herein are considered equivalents thereof.

The illustrations of the embodiments described herein are intended to provide a general understanding of the structure of the various embodiments. The illustrations are not intended to serve as a complete description of all of the elements and features of apparatus and systems that utilize the structures or methods described herein. Many other embodiments may be apparent to those of skill in the art upon reviewing the disclosure. Other embodiments may be utilized and derived from the disclosure, such that structural and logical substitutions and changes may be made without departing from the scope of the disclosure. Additionally, the illustrations are merely representational and may not be drawn to scale. Certain proportions within the illustrations may be exaggerated, while other proportions may be mini-

mized. Accordingly, the disclosure and the figures are to be regarded as illustrative rather than restrictive.

One or more embodiments of the disclosure may be referred to herein, individually and/or collectively, by the term "invention" merely for convenience and without intending to voluntarily limit the scope of this application to any particular invention or inventive concept. Moreover, although specific embodiments have been illustrated and described herein, it should be appreciated that any subsequent arrangement designed to achieve the same or similar purpose may be substituted for the specific embodiments shown. This disclosure is intended to cover any and all subsequent adaptations or variations of various embodiments. Combinations of the above embodiments, and other embodiments not specifically described herein, will be apparent to those of skill in the art upon reviewing the description.

The Abstract of the Disclosure is provided to comply with 37 C.F.R. §1.72(b) and is submitted with the understanding that it will not be used to interpret or limit the scope or meaning of the claims. In addition, in the foregoing Detailed Description, various features may be grouped together or described in a single embodiment for the purpose of streamlining the disclosure. This disclosure is not to be interpreted as reflecting an intention that the claimed embodiments require more features than are expressly recited in each claim. Rather, as the following claims reflect, inventive subject matter may be directed to less than all of the features of any of the disclosed embodiments. Thus, the following claims are incorporated into the Detailed Description, with each claim standing on its own as defining separately claimed subject matter.

The above-disclosed subject matter is to be considered illustrative, and not restrictive, and the appended claims are intended to cover all such modifications, enhancements, and other embodiments, which fall within the true spirit and scope of the present invention. Thus, to the maximum extent allowed by law, the scope of the present invention is to be determined by the broadest permissible interpretation of the following claims and their equivalents, and shall not be restricted or limited by the foregoing detailed description.

What is claimed is:

1. A method of communicating emergency alerts, the method comprising:

receiving a multicast emergency alert message at a set-top box device via a multicast-enabled network, wherein the multicast emergency alert message includes data related to a location code and data related to a set-top box action wherein the set-top box action includes sending emergency alert information received with the multicast emergency alert message to a display device coupled to the set-top box device, generating an audio alert at the set-top box device, sending audio of the audio alert to the display device coupled to the set-top box device, generating a visual alert at the set-top box device, or any combination thereof; and

executing the set-top box action when the location code matches location information stored at the set-top box device and discarding the multicast emergency alert message when the location code does not match the location information at the set-top box device.

2. The method of claim 1, wherein the set-top box action includes requesting video content of a particular channel showing an emergency message from a video server of an Internet Protocol Television system.

3. The method of claim 1, wherein the multicast-enabled network is a private access network of an Internet Protocol Television (IPTV) system.

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4. The method of claim 3, wherein the location information is received at the set-top box device from a server of the IPTV system when a user account associated with the set-top box device is created at the server or at another server of the IPTV system.

5. The method of claim 3, further comprising determining that the location information is not stored at the set-top box device.

6. The method of claim 5, further comprising requesting the location information from a server of the IPTV system via the multicast enabled network.

7. The method of claim 6, further comprising receiving the location information from the server via the multicast-enabled network and storing the location information at the set-top box device.

8. The method of claim 1, wherein the location information is stored at the set-top box device when the set-top box device is installed at a user premise.

9. A method of communicating emergency alerts, the method comprising:

sending a multicast emergency alert message to a plurality of set-top box devices via a multicast-enabled network of an Internet Protocol Television (IPTV) system, wherein the multicast emergency alert message includes data related to a set-top box action and data related to a location code receiving a request for location information from one of the plurality of set-top box devices via the multicast enabled network;

selecting the location information from a plurality of location information based on an identifier of the set-top box device, wherein the identifier is an IP address of the set-top box device;

sending the location information to the one of the plurality of set-top box devices via the multicast enabled network; and

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wherein at least one of the plurality of set-top box devices stores location information and executes the set-top box action when the location code matches the location information.

5 10. The method of claim 9, further comprising receiving an emergency alert from an emergency alert system and generating the multicast emergency alert message based on the emergency alert.

10 11. The method of claim 10, wherein the emergency alert is received from the emergency alert system via the Internet.

12. The method of claim 10, wherein the emergency alert system includes an emergency alert system (EAS) off-air receiver and the emergency alert is received via a private network of the IPTV system.

15 13. The method of claim 10, further comprising determining the set-top box action based on the emergency alert.

14. The method of claim 12, further comprising determining the location code based on the emergency alert.

20 15. The method of claim 9, further comprising sending the multicast emergency alert message to a network interface at a customer premise, wherein the network interface communicates with one of the plurality of set-top box devices.

16. The method of claim 15, further comprising:

25 sending the multicast emergency alert message to a computing device at the customer premise, wherein the network interface communicates with the computing device; and

wherein the computing device compares the location code to location information stored at the computing device and provides a user notification indicating that the multicast emergency alert message has been received at the one of the plurality of set-top box devices.

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